

**What is Claimed is:**

1. A system for displaying monitored measurements of an apparatus, comprising:
  - a data bus interface coupled to a data bus of the apparatus, the data bus containing measurement data which is monitored by sensors in the apparatus;
  - 5 a plurality of instruments each having a microcontroller coupled to the data bus interface; and
  - a motor being driven by the microcontroller and an indicator needle being coupled to the motor for displaying a measurement.
- 10 2. The system of claim 1, wherein the microcontroller includes a power down mode feature wherein the microcontroller monitors the rate of change of the measurement being displayed on the instrument and enters into a power down mode when the rate of change is below a given threshold.
- 15 3. The system of claim 2, wherein the power down mode feature stops current flow through the motor to conserve power.
4. The system of claim 2, wherein when the rate of change is above the given threshold, sequential current pulses to the motor drive the indicator needle to a new measurement.
- 20 5. The system of claim 2, wherein the instrument includes a light indicator coupled to and driven by the microcontroller.

6. The system of claim 5, further comprising an auxiliary output for driving external light indicators and alarms.

7. The system of claim 1, wherein the apparatus is a vehicle.

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8. The system of claim 1, wherein the motor is a stepper motor.

9. The system of claim 1, wherein the instrument is a gauge.

10 10. The system of claim 9, wherein the gauge measures pressure, temperature, liquid level, or rotations per minute.

11. The system of claim 1, wherein the instrument includes illumination from a back light driven by the microcontroller.

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12. The system of claim 1, wherein the data bus interface is a SAE J1708/J1587 interface.

13. The system of claim 1, wherein the data bus interface is a SAE J1939 interface.

20 14. The system of claim 1, wherein the microcontroller drives current through two drive coils of the motor.

15. A method for displaying monitored measurements of an apparatus, comprising:

providing measurement data to a data bus;

coupling a data bus interface directly to the data bus;

coupling a microcontroller of an instrument directly to the data bus interface; and

driving a motor with the microcontroller to display a measurement on the

5 instrument.

16. The method of claim 14, further comprising:

monitoring a rate of change of the measurement being displayed on the  
instrument; and

10 entering a power down mode when the rate of change is below a given threshold.

17. The method of claim 15, further comprising changing the display of the measurement of  
the instrument when the rate of change is above the given threshold.

15 18. The method of claim 16, further comprising sending sequential current pulses to the  
motor to change the display of the measurement.

19. The method of claim 15, further comprising stopping current flow through drive coils of  
the motor.

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20. The method of claim 14, further comprising coupling a light indicator to the  
microcontroller such that the light indicator turns on when the microcontroller detects a  
given condition.

21. The method of claim 14, further comprising coupling an auxiliary output to the microcontroller for driving external light indicators and alarms.

5 22. The method of claim 14, further comprising illuminating the instrument with a back light driven by the microcontroller.

23. The method of claim 14, further comprising driving current through two drive coils of the motor with the microcontroller.

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